

REMARKS

Claims 7-14 have been canceled without prejudice or disclaimer. Claims 1-6 were canceled by prior amendment without prejudice or disclaimer. New claims 15-29 have been added. Accordingly, claims 15-29 are pending in the application.

Request for Continued Examination

A Request for Continued Examination has been filed with this Amendment so that the Examiner may fully consider the currently pending claims and the arguments set forth below.

35 U.S.C. §103(a)

Claims 7-14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Robbins et al. (US Pat. Application Pub. No. 20020029319 - hereafter "Robbins") in view of Ishibashi et al. (US Pat. No. 6463504 - hereafter "Ishibashi"). These rejections are moot in light of the cancellation of these claims, however the new claims are patentable over the art of record for the following reasons.

Discussion of the Invention

Under the invention, a storage system includes a plurality of logical units, one of which may be a command device. A host computer writes commands to the command device, and the external storage system processes the commands, for carrying out coupling operations, such as wherein a logical unit in one storage

system is coupled to a logical unit in another storage system for copying operations. (See, e.g., paragraph [0002] of the substitute specification.) However, host computers should only instruct coupling operations to logical units that they manage. According to the invention, an application is included on the host for controlling coupling operations of the logical units managed by the host. The application issues instructions for coupling operations to the command device, and the host is only able to issue commands for coupling operations via the application. Under the invention, the storage system adds extended logical unit numbers used in coupling to a response of an inquiry command from the host to a specified logical unit. Each said extended logical unit number includes a connection port, a target ID, and a logical unit number. The application obtains a list of extended logical unit numbers corresponding to the logical units managed by the host. Thereby, the application is able to reject a request of a coupling operation directed to logical units other than the logical units managed by the host. In this manner coupling operation commands directed to any logical units not managed by the host are prevented. (See, e.g., paragraphs [0018], [0025] and [0027] of the substitute specification.)

Discussion of Robbins

The Office Action asserts that Robbins teaches an application that enables a computer to couple to one or more first logical units based on information to specify each of said plural logical units, and said computer is not enabled to couple to said one or more second logical units, citing paragraphs 18-23, 35 and 40. However,

Robbins, at these paragraphs, is discussing software on the RAID controller that manages access by hosts to the logical units. This is not what is taught by the present invention, wherein an application on the host prevents the host from sending a coupling instruction to a command device on the storage system. In fact, Robbins fails to teach a command device at all, contrary to the assertion in the Office Action that paragraphs 24 and 28 of Robbins teach such, as set forth in the Office Action in the rejection of claim 9. An examination of paragraph 24 shows that this paragraph is merely directed to configuration flexibility, while paragraph 28 discusses dynamically modifying LUN access. The command device of the present invention does not modify LUN access, but rather receives commands for causing the storage system to carrying out coupling operations. Accordingly, Robbins does not teach or suggest the invention set forth in independent claims 15, 20 and 24.

Discussion of Ishibashi

The Office Action asserts that Ishibashi teaches a storage device that responds with information to hosts specifying assigned logical units (citing col. 3, lines 50-54, and col. 4, lines 2-12). However, an examination of the cited portions shows that Ishibashi is referring to an operator at a support control center entering new configuration information for reassigned logical volumes, and, for affected host adapters, a support controller sends a message indicating what additional logical volumes are now available. This is not the same as a storage system returning extended logical unit number information for each inquiry by a host so that the host

may compile a list of managed logical units, as taught by the present invention. Accordingly, Ishibashi also does not teach or suggest the present invention set forth in independent claims 15, 20 and 24.

Discussion of Burton

Additionally, in the prior Office Action mailed May 18, 2005, in rejection of the original claims, it was asserted that Burton (US 6601128) teaches means responding extended inquiry information for specifying each logical unit according to an inquiry from the host, and that the extended inquiry information includes at least port numbers, target IDs and logical unit numbers (citing Abstract; col. 2, lines 54-63; col. 4, line 25, through col. 5, line 48, FIGS. 2-4; col. 5, lines 4-48; and col. 7, lines 11-16). However, a review of these portions of Burton shows that Burton is referring to path information indicating a preferred controller to use to access each storage area for load balancing. Burton provides no teaching of an application that enables a computer to instruct coupling of one or more first logical units based on information to specify each of the logical units. Further Burton fails to teach a command device in a storage system that receives commands for coupling operations from a host, wherein the storage system carries out the coupling operations so received. Burton also fails to teach an application that passes a command for a coupling operation to a command device in a storage system only if the command is directed to a logical device managed by the host. Accordingly, independent claims 15, 20 and 24 are also patentable over Burton. The other art of record also fails to teach or suggest the

present invention set forth in independent claims 15, 20 and 24. The remaining claims are dependent claims, claim additional patentable features of the invention, and are allowable at least because they depend from allowable base claims.

Conclusion

In view of the foregoing amendments and remarks, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



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